SEQUENCE LISTING

<110> Kawakami, Akira

Terami, Fumihiro

<120> LOW TEMPERATURE EXPRESSION CHITINASE cDNAs AND METHOD FOR ISOLATING THE SAME

<130> 107156-00004

<140> US 09/534,229

<141> 2000-03-24

<160> 8

<170> PatentIn version 3.0

<210> 1

<211> 256

<212> PRT

<213> Triticum aestivum

<400> 1

Met Ala Arg Phe Ala Ala Leu Ala Val Cys Ala Ala Ala Leu Leu Leu
1   5   10   15

Ala Val Ala Ala Gly Gly Ala Ala Ala Gln Gly Val Gly Ser Val Ile
            20   25   30

Thr Arg Ser Val Tyr Ala Ser Met Leu Pro Asn Arg Asp Asn Ser Leu
       35   40   45

Cys Pro Ala Arg Gly Phe Tyr Thr Tyr Asp Ala Phe Ile Ala Ala Ala
      50   55   60

Asn Thr Phe Pro Gly Phe Gly Thr Thr Gly Ser Ala Asp Asp Ile Lys
65   70   75   80

Arg Asp Leu Ala Ala Phe Phe Gly Gln Thr Ser His Glu Thr Thr Gly
              85   90   95

Gly Thr Arg Gly Ala Ala Asp Gln Phe Gln Trp Gly Tyr Cys Phe Lys
             100   105   110

Glu Glu Ile Ser Lys Ala Thr Ser Pro Pro Tyr Tyr Gly Arg Gly Pro
        115   120   125

Ile Gln Leu Thr Gly Arg Ser Asn Tyr Asp Leu Ala Gly Arg Ala Ile
        130   135   140

Gly Lys Asp Leu Val Ser Asn Pro Asp Leu Val Ser Thr Asp Ala Val
145   150   155   160

Val Ser Phe Arg Thr Ala Met Trp Phe Trp Met Thr Ala Gln Gly Asn
              165   170   175

Lys Pro Ser Cys His Asn Val Ala Leu Arg Arg Trp Thr Pro Thr Ala
             180   185   190

Ala Asp Thr Ala Ala Gly Arg Val Pro Gly Tyr Gly Val Ile Thr Asn
             195   200   205

Ile Ile Asn Gly Gly Leu Glu Cys Gly Met Gly Arg Asn Asp Ala Asn
             210   215   220

Val Asp Arg Ile Gly Tyr Tyr Thr Arg Tyr Cys Gly Met Leu Gly Thr
225   230   235   240

Ala Thr Gly Gly Asn Leu Asp Cys Tyr Thr Gln Arg Asn Phe Ala Ser
             245   250   255

<210> 2
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<212> PRT
<213> Triticum aestivum

<400> 2

Met Ser Thr Leu Arg Ala Arg Cys Ala Thr Ala Val Leu Ala Val Val
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Leu Ala Ala Ala Ala Val Thr Pro Ala Thr Ala Glu Gln Cys Gly Ser
         20   25   30

Gln Ala Gly Gly Ala Lys Cys Ala Asp Cys Leu Cys Cys Ser Gln Phe
      35   40   45

Gly Phe Cys Gly Thr Thr Ser Asp Tyr Cys Gly Pro Arg Cys Gln Ser
   50   55   60

Gln Cys Thr Gly Cys Gly Gly Gly Gly Gly Val Ala Ser Ile Val
65   70   75   80

Ser Arg Asp Leu Phe Glu Arg Phe Leu Leu His Arg Asn Asp Ala Ala
         85   90   95

Cys Leu Ala Arg Gly Phe Tyr Thr Tyr Asp Ala Phe Leu Ala Ala Ala
         100   105   110

Gly Ala Phe Pro Ala Phe Gly Thr Thr Gly Asp Leu Asp Thr Arg Lys
      115   120   125

Arg Glu Val Ala Ala Phe Phe Gly Gln Thr Ser His Glu Thr Thr Gly
    130   135   140

Gly Trp Pro Thr Ala Pro Asp Gly Pro Phe Ser Trp Gly Tyr Cys Phe
145   150   155   160

Lys Gln Glu Gln Gly Ser Pro Pro Ser Tyr Cys Asp Gln Ser Ala Asp
        165   170   175

Trp Pro Cys Ala Pro Gly Lys Gln Tyr Tyr Gly Arg Gly Pro Ile Gln
      180   185   190

Leu Thr His Asn Tyr Asn Tyr Gly Pro Ala Gly Arg Ala Ile Gly Val
      195   200   205

Asp Leu Leu Asn Asn Pro Asp Leu Val Ala Thr Asp Pro Thr Val Ala
    210   215   220

Phe Lys Thr Ala Ile Trp Phe Trp Met Thr Thr Gln Ser Asn Lys Pro
225   230   235   240

Ser Cys His Asp Val Ile Thr Gly Leu Trp Thr Pro Thr Ala Arg Asp
        245   250   255

Ser Ala Ala Gly Arg Val Pro Gly Tyr Gly Val Ile Thr Asn Val Ile
      260   265   270

Asn Gly Gly Ile Glu Cys Gly Met Gly Gln Asn Asp Lys Val Ala Asp
      275   280   285

Arg Ile Gly Phe Tyr Lys Arg Tyr Cys Asp Ile Phe Gly Ile Gly Tyr
      290   295   300

Gly Asn Asn Leu Asp Cys Tyr Asn Gln Leu Ser Phe Asn Val Gly Leu
305   310   315   320

Ala Ala Gln

<210> 3
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<212> PRT
<213> Triticum aestivum

<400> 3

Met Arg Gly Val Val Val Val Ala Met Leu Ala Ala Ala Phe Ala Val
1   5   10   15

Ser Ala His Ala Glu Gln Cys Gly Ser Gln Ala Gly Gly Ala Thr Cys
            20   25   30

Pro Asn Cys Leu Cys Cys Ser Lys Phe Gly Phe Cys Gly Thr Thr Ser
            35   40   45

Asp Tyr Cys Gly Thr Gly Cys Gln Ser Gln Cys Asn Gly Cys Ser Gly
        50   55   60

Gly Thr Pro Val Pro Val Pro Thr Pro Ser Gly Gly Gly Val Ser Ser
65   70   75   80

Ile Ile Ser Gln Ser Leu Phe Asp Gln Met Leu Leu His Arg Asn Asp
                85   90   95

Ala Ala Cys Leu Ala Lys Gly Phe Tyr Asn Tyr Gly Ala Phe Val Ala
            100   105   110

Ala Ala Asn Ser Phe Ser Gly Phe Ala Thr Thr Gly Ser Thr Asp Val
            115   120   125

Lys Lys Arg Glu Val Ala Ala Phe Leu Ala Gln Thr Ser His Glu Thr
            130   135   140

Thr Gly Gly Trp Pro Thr Ala Pro Asp Gly Pro Tyr Ser Trp Gly Tyr
145   150   155   160

Cys Phe Asn Gln Glu Arg Gly Ala Thr Ser Asp Tyr Cys Thr Pro Ser
        165   170   175

Ser Gln Trp Pro Cys Ala Pro Gly Lys Lys Tyr Phe Gly Arg Gly Pro
        180   185   190

Ile Gln Ile Ser His Asn Tyr Asn Tyr Gly Pro Ala Gly Gln Ala Ile
        195   200   205

Gly Thr Asp Leu Leu Asn Asn Pro Asp Leu Val Ala Ser Asp Ala Thr
    210   215   220

Val Ser Phe Lys Thr Ala Leu Trp Phe Trp Met Thr Pro Gln Ser Pro
225   230   235   240

Lys Pro Ser Ser His Asp Val Ile Thr Gly Arg Trp Ser Pro Ser Gly
        245   250   255

Ala Asp Gln Ala Ala Gly Arg Val Pro Gly Tyr Gly Val Ile Thr Asn
        260   265   270

Ile Ile Asn Gly Gly Leu Glu Cys Gly Arg Gly Gln Asp Gly Arg Val
        275   280   285

Ala Asp Arg Ile Gly Phe Tyr Lys Arg Tyr Cys Asp Leu Leu Gly Val
        290   295   300

Ser Tyr Gly Asp Asn Leu Asp Cys Tyr Asn Gln Arg Pro Phe Ala
305   310   315

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<211> 23

<212> DNA

<213> Artificial

<220>

<221> misc_feature

<222> (1)..(23)

<223> Artificial primer.

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<210> 5

<211> 20

<212> DNA

<213> Artificial

<220>

<221> misc_feature

<222> (1)..(20)

<223> Artificial primer.

<220>

<221> misc_feature

<222> 12, 18

<223> n can be one of a,c,t, or g

<400> 5

acnaatatca tcaacggcgg   20

<210> 6

<211> 771

<212> DNA

<213> Triticum aestivum

<220>

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<222> (1)..(771)

<223> cDNA

<220>

<221> misc_feature

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<223> n can be one of a,c,t, or g

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ggggggtgccg cggcgcaggg cgtgggctcg gtcatcacgc ggtcggtgta cgcgagcact   120

ctgcccaacc gcgacaactc gctgtgcccg gccagagggt tctacacgta cgacgccttc   180

atcgccgccg ccaacacctt cccgggcttc ggcaccaccg gcagcgccga cgacatcaag   240

cgcgacctcg ccgccttctt cggccagacc tcccacgaga ccaccggagg gacgagaggc   300

gctgccgacc agttccagtg gggctactgc ttcaaggaag agataagcaa ggccacgtcc   360

ccaccatact atggacgggg acccatccaa ttgacagggc ggtccaacta cgatcttgcc   420

gggagagcga tcgggaagga cctggtgagc aacccagacc tagtgtccac ggacgcggtg   480

gtgtccttca ggacggccat gtggttctgg atgacggcgc agggaaacaa gccgtcgtgc   540

cacaacgtcg ccctacgccg ctggacgccg acggccgccg acaccgctgc cggcagggta   600

cccggatacg gagtgatcac caatatcatc aacggcgggc tcgagtgcgg aatgggccgg   660

aacgacgcca acgtcgaccg catcggctac tacacgcgct actgcggcat gctcggcacg   720

gccaccggag gcaacctcga ctgctacacc cagaggaact tcgctagcta g   771

<210> 7
<211> 972
<212> DNA
<213> Triticum aestivum

<220>
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<223> cDNA

<400> 7
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gcggtcacgc cggccacggc cgagcagtgc ggctcgcaag ccggcggcgc caagtgcgcc   120

gactgcctgt gctgcagcca gttcgggttc tgcggcacca cctccgacta ctgcggcccc   180

cgctgccaga gccagtgcac tggctgcggt ggcggcggcg cggggtggc ctccatcgtg   240

tccagggacc tcttcgagcg gttcctgctc catcgcaacg acgcagcgtg cctggcccgc   300

gggttctaca cgtacgacgc cttcttggcc gccgccggcg cgttcccggc cttcggcacc   360

accggagacc tggacacgcg gaagcgggag gtggcggcct tcttcggcca gacctctcac   420

gagaccaccg gcgggtggcc caccgcgccc gacggcccct tctcatgggg ctactgcttc   480

aagcaggagc agggctcgcc gccgagctac tgcgaccaga gcgccgactg gccgtgcgca   540

cccggcaagc agtactatgg ccgcggcccc atccagctca cccacaacta caactacgga   600

ccggcgggcc gcgcaatcgg ggtggacctg ctgaacaatc cggacctggt ggccacggac   660

ccgacagtgg cgttcaagac ggcgatatgg ttctggatga cgacgcagtc caacaagccg   720

tcgtgccatg acgtgatcac ggggctgtgg actccgacgg ccagggatag cgcagccgga   780

cgggtacccg ggtatggtgt catcaccaac gtcatcaacg gcgggatcca atgcggcatg   840

gggcagaacg acaaggtggc ggatcggatc gggttctaca agcgctattg tgacattttc   900

ggcatcggct acgggaataa cctcgactgc tacaaccaat tgtcgttcaa cgttgggctc   960

gcggcacagt ga   972

<210> 8
<211> 960
<212> DNA
<213> Triticum aestivum

<220>
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<222> (1)..(960)
<223> cDNA

<400> 8
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gagcaatgcg gctcgcaggc cggcgggggcg acgtgcccca actgcctctg ctgcagcaag   120

ttcggtttct gcggcaccac ctccgactac tgcggcaccg gctgccagag ccagtgcaat   180

ggctgcagcg gcggcacccc ggtaccggta ccgacccct ccggcggcgg cgtctcctcc   240

attatctcgc agtcgctctt cgaccagatg ctgctgcacc gcaacgacgc ggcgtgcctg   300

gccaaggggt tctacaacta cggcgccttc gtcgccgccg ccaactcgtt ctcgggcttc   360

gcgaccacag gtagcaccga cgtcaagaag cgcgaggtgg ccgcgttcct cgctcagact   420

tcccacgaga cgaccggcgg gtggccgacg gcgcccgacg gcccctactc ctggggctac   480

tgcttcaacc aggagcgcgg cgccacctcc gactactgca cgccgagctc gcagtggcca   540

tgtgcgccgg gcaagaagta cttcgggcgc gggcccatcc agatctcaca caactacaac   600

tacgggccgg cggggcaggc catcggcacc gacctgctca caaacccgga ccttgtggcg   660

tcggacgcga ccgtgtcgtt taagacggcg ttgtggttct ggatgacgcc gcaatcaccc   720

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gggcgcgggc aggacggccg tgtcgccgac cggatcgggt tctacaagcg ctactgcgac   900

ctccttggcg tcagctacgg tgacaacctg gactgctaca accaaaggcc gttcgcatag   960